A POLITICAL ECONOMY OF WORKERS' COMPENSATION WITH RESPECT TO THE DIFFERENCES ACROSS STATES IN SCHEDULED BENEFITS AND MANDATED PARTICIPATION IN A STATE-RUN INSURANCE PROGRAM

By

RICHARD HOFFMAN

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By
Richard Hoffman
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Chairman: Larry Kenny
Major Department: Economics

This dissertation consists of two essays, both employing the political model, in an attempt to discern the impact of various political interest groups on Workers' Compensation (WC). The first essay attempts to explain the wide variation that exists across states in scheduled benefits under the WC program. The second essay attempts to explain the nature of political interests that desire governmental intrusion into the WC system in the form of mandatory participation in a state-run insurance program.

In the first essay, it is hypothesized that competition among political interest groups affects the level of benefits a given state allows. To test this hypothesis, the actual real values for four different scheduled benefits: the loss of an arm at the shoulder; the loss of a leg at the hip; the loss of sight in one eye; and the loss of hearing in one ear,

are employed as the dependent variables. These dependent variables are regressed against a set of independent variables intended to denote political interest groups. Additionally, two different data sets, one using data on all 50 states and another one using data for the 36 states that report to the National Commission on Compensation Insurance, are employed to test the hypothesis. These models, using both data sets, are tested by the regression techniques known as ordinary least squares and the error-components model.

The second essay is an attempt to discern which political interest groups desire, or at least acquiesce to, regulation. It is hypothesized that certain political interest groups, desirous of regulation, are able to gain subsidies in the form of regulation in certain states where they are able to form effective coalitions. This hypothesis is tested for the cross-sectional year of 1984 by means of a probit regression.

CHAPTER 1

INTRODUCTION

Legislative bodies in each of the 50 states have enacted Workers' Compensation (WC) legislation. As the creation of each individual state, the WC system is far from a uniform insurance scheme. This becomes readily apparent when one casually observes the benefits available for scheduled injuries. The wide variation in scheduled benefits from state to state is one of the more noticeable and frequently commented on aspects of the WC system.

Despite the lack of uniformity in benefits, the stated goal of WC is to make the injured worker as whole as possible. To effectuate this goal, WC attempts to provide adequate and equitable benefits in an efficient manner (Berkowitz and Burton, 1987). Adequacy is defined by the National Commission on State Workmen's Compensation Laws (1972) as "delivering sufficient benefits and services to meet the objectives of the program" (Hood, Hardy, and Lewis 1989, p. 32). Sufficient benefits are tied to the worker's loss of income rather than the worker's needs, since WC is an insurance scheme and not a welfare plan. Furthermore, WC pays only a portion of the actual loss in income in order to provide the injured worker adequate incentive to return to work.

In attempting to make the worker as whole as possible by providing adequate and equitable benefits through an efficient delivery system, WC supports broad coverage of work related injuries and diseases. To qualify for WC, an employee must experience "a personal injury by accident arising out of and in the course of employment" (Hood, Hardy, and Lewis 1989, p. 60). In the context of WC, the "arising out of" requirement refers to employment related risks that arise within the scope of risks originating from that employment. While employment related risks are compensable under WC, injuries evolving from personal risks unrelated to employment, such as heart disease, are not compensable. Furthermore, neutral risks unrelated to employment, such as acts of God, are not compensable (Hood, Hardy, and Lewis 1989).

Currently, the judicial system seems to have settled on one of three risk tests that determine whether an injury satisfies the "arising under" dimension of compensability. First, the increased risk test would compensate those injuries due to risks that an employee faces for greater amounts of time than the public at large, even though the risk is shared in common with the public. Second, the actual risk test compensates risks that are part and parcel of one's employment whether or not the public suffers similar exposure. Finally, the positional risk test compensates for risks an employee faces if the worker's employment places the worker at risk at the time of the injury (Hood, Hardy, and Lewis, 1989).

Under WC, the "in the course of" requirement refers to a sufficiently close causal connection between the employment and injury. Under this requirement, courts consider the time, place, and circumstances of the injury as they relate to the injured worker's employment as the relevant factors (Hood, Hardy, and Lewis, 1989).

Whenever the "arising under" and the "in the course of" requirements are met, the injury falls within the scope of WC. Once an injury has been deemed compensable by WC, an employer must provide unlimited medical care. Rehabilitation and vocational services are also required by most states. Additionally, under certain circumstances, an employer must provide cash benefits to the injured worker (Berkowitz and Burton, 1987).

In addition to medical benefits, cash or indemnity benefits are available for injuries classified as temporary total, temporary partial, permanent total, permanent partial, or death. Temporary total benefits are available, after a waiting period, to a worker who is unable to work and continue while the worker is totally and temporarily disabled. Temporary partial benefits are available when earnings are impaired and continue until the worker receives full wages or is declared eligible for permanent total or permanent partial benefits. Permanent partial benefits are available whenever a worker is completely disabled for an indefinite period of time. Permanent total benefits are payable whenever a worker

experiences a permanent impairment or experiences a permanent reduction in earning capacity. Death benefits are available to survivors of a worker killed on the job (Berkowitz and Burton, 1987).

Brief History of WC

Berkowitz and Burton (1987) make a compelling case for the notion that the modern WC system can be traced to ancient precedents. WC appears to be traceable to Babylonian and Mosaic codifications of ancient Semitic common law. These legal systems, seemingly, were the first to at least partially substitute compensation for retaliation. The Code of Hammurabi included the talion principal, or the idea of an eye for an eye, but forbade punishments more severe than the original offense. In addition to the talion, Babylonian law authorized monetary reparation for certain injuries based on the relative classes of the people involved. Under Mosaic law, monetary payments were the rule except in capital cases.

Over time, other systems, such as the Hittite and Hebrew codifications, rendered the talionic and corporal punishments secondary to the compensatory schemes. Of particular note is the Hebrew system which codified damage, pain, healing, loss of time, and intentional injury as specific grounds for monetary reimbursement. Furthermore, the Hebrews are credited with adopting the practice of awarding specific sums for specific injuries regardless of social rank.

However, the progression of the WC concept was not smooth. The Anglo-Saxon scheme utilized the Biblical notion of a schedule of injuries, but reintroduced the notion of class distinctions. Additionally, the attempt to award a sum certain for specific injuries began to disappear. It is hypothesized that this development is the result of a lack of flexibility, unrealistically high payments, or the fact that the offender's ability to pay was not recognized. Furthermore, over time, criminal laws began to substitute more and more for compensatory schemes as a means for social control.

European Experience

The Biblical experience with WC notwithstanding, the compensation systems developed in Europe during the nineteenth century are widely regarded as the precursors of the current American system (Hood, Hardy, and Lewis, 1989). Germany, under the influence of social philosophers, was the first country to enact compensation legislation. This legislation, enacted in 1838, covered Germany's railroad workers. Coverage was extended to workers in factories, mines, and quarries in 1873. However, the first true WC legislation was not enacted until 1884. This piece of legislation provided for compulsory coverage and applied to the mining, manufacturing, and transportation industries.

In 1897, Great Britain passed legislation upon which early American acts are most closely identified. The British

legislation was applicable only to hazardous occupations and required the employer to provide the employee benefits for work related injuries. Thus, unlike Germany, Great Britain's scheme was much narrower in scope and did not provide insurance as such.

Between 1884 and 1907, 16 European nations, South Australia, Queenland, and the Cape of Good Hope had enacted compensation legislation. By 1913, 41 foreign countries had enacted some form of WC for industrial accidents. Clearly this type of social legislation had gained widespread popularity in a relatively brief period of time (Hood, Hardy, and Lewis, 1989).

American Experience

Undoubtedly, American legislators were influenced by the general acceptance of WC programs in foreign lands. However, early attempts to enact WC legislation in the United States were met with considerable resistance. Early WC legislation succumbed to both Constitutional infirmities and indifference on the part of both employers and employees.

Compulsory legislation in Maryland in 1902 was found to violate the Constitution because it denied the right to a jury trial and violated the separation of powers doctrine. Montana legislation, enacted in 1907, was struck down on equal protection grounds. A voluntary statute was passed in Massachusetts in 1908, but it failed due to employee and employer indifference (Hood, Hardy, and Lewis, 1989).

Despite these setbacks in enacting WC legislation, there was a growing belief that the then existing common-law system failed to provide adequate compensation, wasted resources, and caused undue delay. Thus, in response to these perceived evils, states began to amend their Constitutions to permit the enactment of compulsory WC programs (Hood, Hardy, and Lewis 1989). In 1911, Wisconsin became the first state to pass WC legislation that survived Constitutional scrutiny. That same year, New Jersey passed the first legislation that contained scheduled benefits (Berkowitz and Burton, 1987).

Prior to the enactment of statutes mandating WC, WC was governed by the common-law tort system. The common-law imposed a number of duties on an employer such as: provision for a safe work place; provision for safe tools; provision for a sufficient number of trained workers; provision for warnings of hidden dangers; provision for the promulgation and enforcement of safety rules (Hood, Hardy, and Lewis, 1989).

Theoretically, a breach of any of these duties would render an employer liable for an employee's injuries. However, as practical matter, an employer's liability was sharply curtailed by what is often referred to as the "unholy trinity" of common-law defenses (Keeton, 1982).

The defenses available to an employer to limit or abrogate liability were (1) the fellow servant rule; (2) contributory negligence; and (3) assumption of risk. Apart from a contract to the contrary, the fellow servant rule left

an impaired employee without a remedy where the injury was the result of a fellow servant's negligence. The doctrine of contributory negligence cut off an employer's liability where the injured worker failed to exercise reasonable care for his own safety. Under the theory of assumption of risk, an employee was held to have voluntarily agreed to assume the dangers ordinarily incident to the work. Thus, at common-law, the negligence of a coworker, one's own negligence, or the failure to appreciate the dangers associated with the job could all stand as a complete bar to the employee's recovery.

The harshness of the employer's defenses to work-related injuries was tolerated, at least in part, by the desire to encourage expansion of our infant industries during the Industrial Revolution. However, rapidly increasing injury rates, which often left the injured as wards of the state, led to a growing dissatisfaction with the common-law apparatus for redressing workplace injuries. This dissatisfaction, coupled with sharp criticism from social philosophers and the popularity of the European compensation system, began to lead to the collapse of the common-law system in the United States (Hood, Hardy, and Lewis, 1989).

The common-law system was replaced by statutory enactments in which the employer is held strictly liable for injuries arising out of and in the course of employment. Thus, the employer is charged with the responsibility of furnishing medical care, rehabilitation services, and cash

benefits regardless of who is at fault. Additionally, the WC system provides the injured worker reasonably prompt and certain payments as compensation for the injury. However, the system has emerged with a quid pro quo. Employers enjoy limited liability and employees are generally prevented from bringing a lawsuit against the employer in exchange for the statutory benefits (Keeton, 1982).

Institutional Background

Even though WC is the creation of each of the individual 50 state legislatures, and as a consequence far from a uniform scheme, there are some aspects of the system that are more or less common in all the states. As previously noted, early attempts at WC legislation mandated elective coverage due to Constitutional problems. However, Constitutional amendments in many states, coupled with the current view that WC legislation is a valid exercise of police power, has ameliorated this problem. As a consequence, today, 47 states have enacted compulsory coverage provisions. In the three states (New Jersey, South Carolina, and Texas) that allow an election, common law defenses have been abrogated so that as a practical matter few firms make this election (Larson, 1972).

Part of the quid pro quo for imposing strict liability on the employer requires WC to be the exclusive remedy available to the injured worker. Thus, the injured worker is entitled to benefits under WC, but is generally precluded from pursuing

a claim in tort, instead of, or in addition to, the WC remedy. However, due process concerns has likely led to a litigious system in some states. In other states, employers have been forced to battle the exclusive remedy doctrine in legal challenges. Thus, vestiges of the archaic Constitutional concerns persist and serve to diminish the certainty and promptness of injury awards.

By and large employers can fulfill their obligations to purchase WC insurance. As mentioned earlier, indemnity benefits are payable in addition to medical expenses. As a general rule, states pay two-thirds of the wage rate for temporary and permanent total liability. Minimum and maximum amounts are specified in each state. Maxima exceed 100 percent of the statewide average wage rate in 4 states, are 100 percent in 26 states, and lie between 66 and 100 percent in the other 20 states (Worrall, 1983).

Employers are required to pay insurance premiums for WC that are based upon what are called manual or class insurance rates. These rates are industry or occupational group specific. Experience rating is a way of modifying the manual rates to account for a specific firm's injury history. If a specific firm's experience is better than average for a firm of its size and class, its premiums will be reduced. Conversely, if a firm's experience is worse than average for its size and class, its premiums will increase.

The experience modification factor is the weighted average of the firm's experience and the class experience, relative to the class experience. These weights are determined by the actuarial credibility of a firm's own experience. As the credibility increases, a firm's own loss experience is given greater weight. A firm's credibility depends on the total expected losses for a typical firm in that class. Expected losses depend on the firm's payroll and expected class loss rates. The credibility of a firm's own experience increases with firm size, hazardousness of the industry, and wages. Greater weight is given to the firm's own experience as credibility increases, and less weight is accorded to the class experience. Thus, a small firm in a non-hazardous industry may have its premiums determined by the class rate. This is called class-rating. On the other hand, a large firm in a hazardous industry may have its premiums determined solely by its own experience. This is referred to as self-rating (Victor, 1983).

Plan for the Dissertation

Chapter 2 develops a brief overview of the political model, the theoretical structure utilized in this paper. In this chapter, a small number of effects arising from the political economy of the WC system are delineated. Next, these effects are explained in the context of the various political interest groups used to determine which groups are to be taxed and which groups are to receive subsidies.

Finally, research similar to that attempted in this paper is presented and analyzed. The efforts of this paper are then distinguished from previous research.

Chapter 3 outlines the methodology used in the following two chapters. Additionally, the data and manipulations performed on the data are discussed. Finally, the data sources are revealed.

Four different models, each with a different scheduled benefit as the dependent variable, are presented in Chapter 4. Pooled time series cross-sectional data are collected for the various states over two-year intervals. Ordinary least squares regressions are computed for data sets using data from all 50 states, as well as a restricted data set which includes those 36 states that report insurance information to the National Commission on Compensation Insurance. Later in the chapter these same two data sets are analyzed using the error-components model.

In Chapter 5, a dummy variable is employed to capture those states which require participation in a state operated WC insurance fund. This variable assumes a value of 1 if the state requires participation in the fund, and 0 otherwise. Since the dependent variable assumes a limited number of values a probit model is employed. Variables representing political interest groups are regressed against the dependent variable, and the results are analyzed.

Chapter 6 is a summary of the theoretical structure and the results that emanate from that structure. An attempt is made to piece together a coherent picture of the determinants of the WC system.

CHAPTER 2

THEORY

Introduction

Government regulation is a seemingly omnipresent condition of modern life. Though many economists object to the number and nature of government regulations in the labor market, the labor market has not been spared from governmental intrusion. One of the most regulated aspects of the labor market concerns occupational health and safety. As witness to this fact, Workers Compensation and the Occupational Safety and Health Administration stand as prominent legislative enactments imposing significant regulations.

In analyzing the labor market, these and other regulations must be accounted for. Carmichael (1986) states that there are two different approaches to policy-oriented research into government regulation of the labor market. One approach is an analysis based on compensating wage differentials. A second approach used to analyze labor market regulation is the theory of regulation associated with Stigler (1971) and Peltzman (1976).

Many economists believe that competitive labor markets will provide workers, who are fully informed, with optimal safety. That is, competitive labor markets provide safety up

to the point where the marginal supply price equals the marginal willingness of the worker to pay for safety (Thaler and Rosen 1975). Thus, in an unregulated market, workers are able to choose hazardous occupations with wage differentials reflecting the degree of risk they are willing to assume.

Some economists believe regulation of the labor market is necessary. Oi (1973), Diamond (1977), Rea (1981) and Spence (1977) have adopted the assumption that workers systematically underestimate the risk inherent in their jobs. If this is the case, market outcomes will be inefficient and policy options such as WC can result in improvements.

The theory of regulation assumes that government intervention is the product of legislative battles between competing interest groups. The goal of each competing interest group is to increase its wealth by seeking favorable legislation. Carmichael (1986) characterizes the safety rule under the theory of regulation as an attempt by workers to acquire a portion of the producers' wealth.

The approach that will be employed in this paper is the theory of regulation. This approach has been chosen for two primary reasons. First, there is no assumption that economic efficiency underlies legislative outcomes. Thus, in enacting legislation, legislators are not assumed to react to market imperfections, real or imagined. Second, the theory of regulation is completely independent of the information sets of workers. The theory of regulation is valid regardless of

whether workers are well aware of, underestimate, or overestimate the risk they undertake in performing their jobs.

Theory of Regulation

The theory of regulation as posited by Becker (1983) assumes that legislation is the product of the efforts of individuals who form political interest groups to maximize their own interests. Equilibrium in Becker's model depends on political interest groups' abilities to bring pressure on the relevant issues, the effect of additional pressure, the size of the groups, and the deadweight cost of taxes and subsidies.

Political interest groups are composed of individuals. A particular political interest group may be defined by its members' occupation, industry, income, sex, age, race, etc. Taxes borne and subsidies gained by political influence groups are the result of competition between competing groups. Each group is assumed to use its political influence to gain subsidies or minimize taxation in an effort to enhance the well-being of its members.

Additional pressure can be exerted by the interest groups to gain greater political influence. Advertising and expenditures of time and money on political campaigns are a couple of ways that political influence can be increased.

Political equilibrium is a function of the relative efficiency of each group. Efficiency is determined in part by reducing the amount of free riding within the relevant political interest group. As a general proposition, the

larger the group the greater the problem of free riding becomes. However, larger groups can offset the free riding problem up to a point with increased opportunities for economies of scale.

Deadweight costs are associated with redistribution to subsidized groups and away from the taxed groups. According to Becker, the deadweight costs are the result of the allocation of time between work and leisure, acquisition of human capital, consumption patterns, etc. Increases in the deadweight costs decrease political pressure from subsidized groups since the gains from increased taxation diminish. However, increases in the deadweight costs increase political pressure of the taxed groups because tax reductions have a smaller effect on the amount available as a subsidy. Thus, the existence of deadweight costs gives taxed groups an advantage in the competition for political influence. Presumably, subsidized groups have acquired their subsidies by virtue of their efficiency, their size, or their access to political influence.

Becker's model assumes that political pressure groups use their political influence to raise the welfare of the group's members. Under this theory, the various groups expend time and money to create political pressure in order to acquire political resources. In the context of this model, Becker assumes that each person's utility is measured by that person's full real income. Thus, an individual's utility

function depends on income, leisure and other non-market activities.

Becker has developed a simple model of political pressure groups, by assuming the existence of two homogenous groups s and t. Income, Z°_{s}, and Z°_{t}, measures the full income of each member of the subsidized and taxed groups prior to redistribution. Z_{s} and Z_{t} measure incomes after redistribution, thus

(1) $\quad R_{s} = Z_{s} - Z^{\circ}_{s}$ and $R_{t} = Z^{\circ}_{t} - Z_{t}$

and R_{s} and R_{t} respectively measure the redistributions to each s and away from each t.

Subsidies are generated by political activities that raise the group's income, and taxes are generated by political activities that lower a group's income. The amount raised by taxing t is

(2) $\quad S = n_{t}F(R_{t})$

where n_{t} is group size, R_{t} is the tax paid by each member and F is the revenue generated from a tax of R_{t}. Tax revenues (F) allow for deadweight costs such as the effect of taxes on hours worked. These deadweight costs tend to increase as taxes increase so that

(3) $\quad F(R_{t}) \leq R_{t}$, $F' \leq 1$, and $F'' \leq 0$.

(4) $\quad n_{s}G(R_{s}) = S = n_{t}F(R_{t})$

is the subsidy to each member s, where n_{s} is group size, and R is the subsidy each member receives, and G is the cost of providing the subsidy. Since G incorporates the deadweight

costs and an increase in these costs decreases pressure of subsidized groups so that

(5) $G(R_s) \geq R_s$, $G' \geq 1$, and $G'' \geq 0$.

An influence function determines the amount of taxes raised. Becker specifies the influence function as

(6) $n_s F(R_t) = -I^t(p_s, p_t, x)$.

where p_s and p_t are the pressure exerted by s and t and x denotes other variables. An influence function also determines the amount of the subsidy and is specified by

(7) $n_s G(R_s) = I^s(p_s, p_t, x)$.

As indicated by (4), the influence functions are not independent. Consequently, increases in pressure by the subsidized group results in increased subsidies. This means that the taxes paid by the taxed group increase due to their decrease in political pressure. Thus,

(8) $n_t F(R_t) = -I^t \equiv n_s G(R_s) = I^s$

or

$$I^s + I^t \equiv 0$$

Differentiating (8) with respect to any variable yields

(9) $$\frac{\partial I^s}{\partial y} \equiv I^s_y \equiv \frac{-\partial I^t}{\partial y} \equiv -I^t_y$$

This indicates that increased pressure by either group increases its influence and furthers its interest. Furthermore, if a change in some characteristic of a group increased its influence, this characteristic would decrease the influence of the other group.

Becker's theory provides one explanation for WC programs based on interest group influence. Stigler and Peltzman have similar models. According to Peltzman, interest groups attempt to mount political pressure to affect the redistributive efforts of the WC system.

Stigler contends that in regulatory processes the producer interest dominates the consumer interest. Stigler theorizes that the producer interest will prevail because it is composed of small groups with a larger per capita stake. While Stigler discusses the idea of many bidders but only one successful bidder, the Becker assumption of no clear cut winners seems more appropriate in the context of WC.

Nevertheless, Becker and Stigler both view group size as an important factor in the political process. Voting is infrequent, and the voter must expend resources to inform himself of the issues and a politician's platform. If the information costs exceed the prospective gains, interest groups with small per capita stakes will not incur them. Thus, large diverse groups may not effectively lobby against an issue even if it is inimical to their interests. Furthermore, costs of organization may place limits on effective group size.

A second explanation for the existence of WC is a desire to maintain income in the event of an occupational injury. Generally speaking, the intended purpose of WC benefits is to maintain the income of injured workers. Thus, those states

with relatively higher per capita incomes should have higher benefits. Under the assumption that workers are risk averse and assuming no administrative costs, workers can be expected to select insurance which would provide them with their expected income.

This can be seen by employing a simplified insurance model. Assume W is a worker's income if he is working and uninsured, and that p is the probability of an injury, which would prevent the uninsured from working. Then the expected income of the uninsured worker is

$$EW = p(0) + (1-p)W$$
$$= (1-p)W$$

Now assuming the worker is insured but not injured, the worker would be paid W; since the worker would pay a WC premium of pW, he is left with a net income of (1-p)W. If the worker has insurance and is injured, the worker would earn no income from employment but would be paid W less the WC premium or (1-p)W from the WC system. Thus, in both scenarios, the worker receives his expected income, (1-p)W. Since a worker's expected income rises as his wages increase or the probability of an injury decreases, workers in higher income states and workers in lower accident states should expect higher benefits.

A third explanation can be advanced as the reason WC exists. WC may be an indication that society believes there are labor market imperfections. Labor market imperfections

can arise when workers' perception of safety differs from the actual level of safety existing in a job. This can be viewed in terms of a cost benefit analysis. Firms minimize cost where

$$\frac{\text{d safety expenditure/worker}}{\text{d safety}} + \frac{\text{d wage}}{\text{d safety}} = 0$$

The first term represents the cost of safety while the second term represents the benefit to the firm, in terms of reduced wages, of additional safety. Furthermore,

$$\frac{\text{d wages}}{\text{d safety}} = \frac{\text{d wages}}{\text{d perceived safety}} \cdot \frac{\text{d perceived safety}}{\text{d actual safety}} .$$

If $\frac{\text{d perceived safety}}{\text{d actual safety}} = 1$, workers correctly perceive safety and there are no market imperfections with respect to safety.

If $\frac{\text{d perceived safety}}{\text{d actual safety}} < 1$, workers undervalue safety and a market imperfection exists to the extent that the market provides too little safety.

If $\frac{\text{d perceived safety}}{\text{d actual safety}} > 1$, workers overvalue safety and a market imperfection exists to the extent that the market provides too much safety. WC could arise if workers are believed to undervalue safety. Under this hypothesis, WC should be more generous in less educated states, since less educated workers are more likely to undervalue safety. Now, predictions from these three models of WC will be developed for specific variables.

Predictions

In both of the essays that follow, the models will draw from a set of variables that are intended to denote political interest groups. Within the context of WC, these interest groups appear to be competing for political influence primarily on the issues of benefits, safety, and regulations.

WC benefits are important to the average worker because these benefits may be the sole source of income during rehabilitation following a work related injury. In states where incomes are relatively high, WC benefits should be higher than in less affluent states. As noted in the simplified insurance model, increases in income, as long as there is not a corresponding increase in the probability of an accident, cause an increase in expected income. Increases in expected income lead to increased benefits.

As a rule, the more educated the worker, the more income that person will command in the labor market. Therefore, the logic expressed in the simplified insurance model is equally available to the relatively educated worker. Persons with higher educational attainment are wealthier, place a higher value on life and, therefore, accept less risk. Thus, lower injury rates should make it cheaper to raise compensation levels, which in turn should lead to higher WC benefits.

Additionally, more educated workers are more likely to correctly perceive safety. More educated workers are in a better position to assess the risks inherent in an employment

situation. Educated workers' ability to assess risks stems from their ability to correctly evaluate the risks they face on the job. The misperception hypothesis assumes that those with poor information about safety will undervalue safety. Since more educated workers are more likely to correctly perceive job related risks, the misperceptions hypothesis predicts that benefits should be less generous in more educated states.

Historically, blacks have attained lower educational levels then whites. As a consequence, blacks, as a group, have lower incomes than whites. This lower educational attainment has relegated blacks to the lower rungs of the job preference echelon. Low echelon jobs are typically mundane and physically taxing. Fatigue and boredom are usually associated with these types of jobs. Thus, for these types of jobs, it can be expected that injury rates will be high. Consequently, it should be expected that injury rates are higher for blacks than for whites. Additionally, blacks have been less politically active than whites. This, as well as the educational achievement and job opportunities of blacks, indicates that benefits will be lower for states with a relatively high percentage of blacks.

In comparison to other workers, young workers are inclined to feel somewhat more omnipotent. Young workers can, therefore, be expected to take more risks. Consequently, one would expect an increase in the frequency of injuries with a

youthful workforce. In addition to the feeling of indestructibility the young experience, a young workforce is obviously less experienced than an older work force. Younger workers have not had sufficient time on the job to acquire the requisite firm specific human capital necessary to prevent accidents that more experienced workers handle as a matter of course. An increase in accident frequency should lead to lower expected income. Therefore, a political interest group comprised of a young work force should expect lower WC benefits than a more seasoned work force.

Women are injured in work related accidents less often than men (Dillingham, 1983). The difference in injury frequency between the sexes is explained in part by the occupational distribution of the sexes. Historically, at least, women have not sought employment in hazardous occupations. As a result injury rates should be lower in states where women make up a relatively large share of the labor force. This would seem to indicate that WC benefits would be higher where women are a relatively large portion of the labor market.

However women have traditionally been less attached to the labor market than men. One reason women become disassociated from the labor market is to allow themselves to raise families. Because of this detachment, women frequently enroll in degree programs in which the frontier of knowledge is immutable or expands slowly. Therefore, women select

themselves into areas of the labor market where the requisite skills remain fairly stable over time and a ready supply of labor exists and even expands. This indicates that where women are a relatively large portion of the labor market, wages will be lower and WC benefits will be lower. On net, assuming that per capita income, the proxy for earnings used in this paper, is an imperfect measure of income, it is unclear whether the accident or wage effects dominate.

Russell (1974) has found that accident frequencies are an increasing function of firms size up to fifty employees and thereafter a decreasing function. This can be explained by the fact that increases in benefits cause an adjustment in the manual rates to reflect the cost of injury at the new benefit level. Since small firms are generally not fully experience rated, costs increase directly with increases in benefits, and accident prevention has little impact on the magnitude of these changes. As a firm's payroll increases, it becomes more credible, its rates are more a function of its own experience, and accident prevention translates to cost savings.

Russell poses two additional possible explanations for this occurrence. First, she states that economies of scale in safety make it more likely that large firms receive a cost benefit from accident prevention than small firms. Secondly, large firms may benefit from production technologies that are not feasible for smaller firms.

As the number of large firms increases, incentives to purchase safety increase because large firms can lower costs through full experience rating or self insurance. Due to lower insurance costs, it can be expected that states with a relatively large percentage of large firms should have higher benefits than states with a lower percentage of large firms.

Unionism began to emerge in this country due to the working conditions employees were forced to endure. Thus, historically, unions have advocated safe workings conditions. To the extent that increases in benefits are associated with increased safety, unions can be expected to support benefit increases. However, unions are more prevalent in risky industries than relatively accident free industries. If this aspect of unionism dominates, benefits should decline since increased frequency of accidents lowers benefits.

The insurance industry has traditionally been a powerful lobbying force in the political arena. Vigorous lobbying efforts have proven successful many times in the past in influencing legislation favorable to their causes. While the insurance industry is a competitive industry, a highly regulated state can expect fewer insurance companies per capita to endure the regulatory environment. Since insurance regulation is likely to be accompanied by stronger WC provisions, fewer insurance companies per capita should be associated with higher benefits.

A watchdog group, Americans for Democratic Action (ADA), rates politicians each year by recording their votes on legislation favored by liberals. States with relatively high ADA scores can be loosely characterized as having a liberal orientation. Liberal states more likely favor legislation which promotes the well being of the downtrodden at the expense of other groups. If WC redistributes toward the poor, one can expect states with high ADA scores to have higher WC benefits.

Butler and Appel (1990) argue that increases in a neighboring state's benefit will decrease a firm's opposition to an increase in benefits for the state in which the firm is domiciled. Where firms face increased labor costs, along with increases in benefits, there is a temptation for that firm to relocate to lower cost states. However, when costs are higher in adjacent states, that temptation diminishes.

It is also a well known fact that the labor force is mobile. Since WC benefits are an important part of the compensation package that an employee receives, the rational worker will seek, ceteris paribus, employment in states that offer higher benefits. Thus, states offering relatively low benefits can expect to lose part of its labor force to the higher benefit states. Potential loss of skilled workers should serve as an adequate incentive for a state to keep its benefit schedules on par with neighboring states.

The WC system is a state operated insurance program which is exclusively under the jurisdiction of each of the states' legislatures. This gives each state the freedom to experiment with its own system while allowing the states to see what works and what does not work in other systems. However, in 1973, a national commission was formed to study the WC system. The commission issued a report that was highly critical of the state-run system and recommended that the program become federalized. In particular, the commission noted nineteen areas in which the system as it was being operated needed improvement. While currently none of the states has adopted each of the recommendations, scheduled benefit awards have risen dramatically. The threat of invading the states' sovereignty in the area of WC is expected to increase benefits.

Some states require firms within that state to participate in a state funded WC insurance program. In states which require participation in the state fund, the potential exists for low accident industries to subsidize high accident industries. Where some redistribution occurs, higher benefits are cheaper since other firms are paying part of the cost. This increases the demand for more generous benefits.

Previous Research

Surprisingly, little economic research has been conducted in the area of WC. In particular, considering the wide variations across states in scheduled benefits, it is somewhat

curious that this particular phenomenon has not been adequately explained. Two authors have, however, made preliminary investigations into the political economy of WC.

Danzon (1988) and Butler and Appel (1990) both have employed the political model to explain the maximum weekly benefit available under WC and employ proxies for various pressure groups within the political model to explain changes in benefits. Danzon employed the technique of ordinary least squares to regress proxies for pressure groups from the political model against the maximum level of benefits available in a state. Seemingly, the proxies used are designed to capture the influence of firms, unions, and workers on the level of benefits available in a state.

Danzon employs pooled cross-sectional data for five-year intervals between the years 1970-1985 for 35 of the 36 states as well as Puerto Rico and the District of Columbia which report insurance claim information to the National Council on Compensation Insurance.[1] Danzon's study reveals that several labor market characteristics have an impact on the maximum level of benefits a state will provide. First, as the percentage of low-income families increases within a state, benefits decline. Low earnings lead to reduced expected earnings, which in turn implies benefits will be lower. Furthermore, it is likely that the cost of organizing effective political pressure groups is outweighed by the expected benefit increases this group can achieve. Second,

where the percentage of firms with 20 or fewer employees increases, benefits decline. Danzon states that this is consistent with a negative price elasticity of demand. This is also consistent with the fact that small firms have higher accident rates, which leads to lower benefits. Finally, as the percentage of workers in agriculture and services increase, Danzon finds WC benefits increase. Danzon hypothesizes that this result may be a reflection of the fact that private supplementation of WC is met with higher costs. However, it is unclear why this variable is included in Danzon's model.

Interestingly, Danzon does not find that unions have much impact on the maximum level of benefits. However, Danzon's study reflects a period of time when the percentage of workers represented by unions had waned and government had begun to usurp the union's role of promoting safety in the workplace. Additionally, while unions have long advocated safe working conditions, unions are frequently found in the riskier occupations. More accidents should lead to decreased benefits, but it is unclear which of these two effects will dominate. Danzon's results suggest that these two effects cancel each other out.

The log of the wage rate was also insignificant, although positive, in Danzon's study. Furthermore, the variable representing educational attainment in Danzon's work is positive but insignificant. Possibly, this result may have

occurred because these two variables are highly correlated. Additionally, income and wages may be correlated with the percentage of low wage families.

Butler and Appel used a probit analysis to determine a relationship between proxies for firms, unions, and the federal government and changes in the maximum and minimum benefit available in the different states. Like Danzon, Butler and Appel employ pooled cross-sectional data for the states which report insurance data to the National Commission on Compensation Insurance. Butler and Appel's data set was collected annually for the 30-year period between 1955 and 1985.

The research by Butler and Appel provides evidence that interest groups representing firms, unions, and the federal government all influence the change in maximum benefits but only the firm influences changes in the minimum benefit. With regard to pressure groups representing firms, Butler found that the probability of a benefit increase rises when a state permits group self insurance and falls as payrolls increase. Group self insurance is a means by which small firms can pool their losses and obtain the benefits of more complete experience rating. Thus, opposition to benefit increases should be less pronounced in states where group self insurance is permitted.

The proxy selected by Butler for unions, the proportion of all nonagricultural workers employed in mining and

construction, was found to be directly related to WC benefit increases. Thus, as the proportion of workers in mining and construction increase within a state, the probability of an increase in the maximum benefit will increase. This result is not surprising, since unions are a powerful political pressure group that favor higher benefits. However, unions are also generally located in the riskier industries. If accident rates increase, benefits can be expected to fall. The influence effect appears to dominate the injury rate effect.

Butler and Appel include a dummy variable and a time trend to capture the influence of the federal government. Butler and Appel attempt to capture a threatened federalization of the state-run system spearheaded by a report issued in 1973 by the National Commission on State Workman's Compensation laws. The National Commission issued a report in which it suggested 19 areas in which the states needed to improve. Additionally, the National Commission urged federal action against states that failed to comply by 1975. The dummy variable and the time trend are designed to measure the influence that the federal lobby has on WC.

The federal influence has proven to have a positive impact on the probability of benefit increases. Ever since the Constitutional Convention, states have jealously guarded against the increasing encroachment of the federal government into areas that states have been permitted to legislate. Therefore, it can be expected that states take the

recommendations seriously and increase benefits rather than see the state system of WC become federalized.

Additionally, Butler and Appel looked at the influence of what they refer to as spatial considerations. Butler and Appel include a dummy variable to control for regional differences as well as a measure of benefits available in contiguous states. In general, southern states provide lower benefits than elsewhere in the United States. Furthermore, Butler finds that when neighboring states increase benefits, opposition to benefit increases in the home state decreases.

Thus, Butler and Appel find considerable support for the political model. Each of the pressure groups in the Butler-Appel model are shown to influence the probability that the maximum benefit responds to their activities. However, the most significant variable in their model is the change in benefits in contiguous states.

Contribution of This Paper

The work in Chapter 4 is similar in many respects to what Danzon (1988) and Butler and Appel (1990) have previously done. However, there are several differences. Danzon and Butler and Appel both use the political model as the underlying theoretical structure but follow in the tradition of Stigler (1971) and Peltzman (1976). The focus here, while it could easily be adapted to the Stigler-Peltzman approach, follows along the lines of Becker (1983).

Danzon's work appears to be designed to capture the political influence of workers, unions, and firms on the WC system. The Butler and Appel model is designed to capture the influence of firms, unions, and the federal government on the WC system. While this paper could be organized along the lines of workers, firms, unions, and the federal government, a more diverse set of political interest groups is employed and analyzed within the context of Becker's framework.

Danzon uses the log of the maximum weekly benefit allowable under the WC system for each state in her data set as the dependent variable. Butler and Appel focus on the changes in the maximum and minimum benefits allowed by a state as the dependent variable. In this paper, the dependent variable is the actual real benefit allowed by a state for each of four scheduled injuries. The value employed as the dependent variable in this paper is the discounted value of an amount generated by multiplying the maximum weekly benefit by the maximum duration a state will pay the benefit. Thus, unlike the previous research in this area, the dependent variable used in this paper incorporates the maximum length of time a state will pay benefits for certain injuries as an additional source of variation from state to state.

Furthermore, four disparate scheduled injuries are used as the dependent variable in this paper. There appears to be no real rhyme or reason to the values that the various state legislatures ascribe to these injuries. This seemingly

arbitrary assignment of awards to different scheduled benefits affords an opportunity to test the robustness of the model.

While some of the variables used in this paper are the same as the ones employed in the previous research, the data sources are different. The previous research relied on data collected by the National Commission on Compensation Insurance. However, data collected for this paper comes from a number of different data sources. Additionally, this paper includes several different independent variables not included in the prior research.

Chapter 4 tests the hypothesis that political interest groups, denoted as the independent variables, affect the size of WC benefits available in a particular state. Interest groups affect the amount of benefits available in a state in at least three different ways. First, political interest groups mount political pressure in an attempt to affect redistribution within the WC system. Second, as demonstrated by the simplified insurance model, benefits are expected to be higher in those states where income is relatively higher and/or accident rates are lower. Thus, in an attempt to at least maintain income in the event of injury, political interest groups will exert lobbying efforts to obtain that outcome. Third, political interest groups may believe that labor markets suffer from imperfections, in the sense that workers' perceptions of safety differs from the actual level of safety existing in a job. Where workers systematically

undervalue safety, WC is a means to correct the imperfection, and political interest groups may lobby for higher benefits in those states where safety is relatively undervalued.

Chapter 5 is based on the assumption that some redistribution is possible in the WC system. Six states require participation in a state-operated WC insurance fund. Participation in the fund allows for the possibility that low accident industries subsidize high accident industries. This particular aspect of the WC system has not as yet been explored. This paper attempts to explain the nature of political interest groups that are successful in obtaining this form of governmental intrusion.

NOTES

1. The 36 states which report insurance information to the National Commission are: AL, AR, CO, CT, FL, GA, HI, ID, IL, IN, IA, KS, KY, LA, ME, MD, MI, MN, MS, MO, MT, NE, NH, NJ, NM, NY, NC, OK, RI, SC, SD, TN, TX, UT, VA, WI. It is not clear which state Danzon omitted from her study.

CHAPTER 3

DATA SOURCES

In the following two chapters, pooled cross-sectional data for states have been collected biennially for the time period 1960 through 1988. Two-year intervals have been employed because until 1970, the National Chamber of Commerce published the bulletin which lists scheduled benefits every two years. The starting and ending periods are due to data limitations, as well as the fact that the data neatly splits the difference between the time period prior to the 1973 report issued by the National Commission and the period of time which follows. Furthermore, research was begun on this project in 1988, and Census data which became available for 1990 was not readily available in time to incorporate in this analysis.

In both of the two chapters that follow, the economic theory of regulation is employed as the underlying theoretical structure. Within the theory of regulation, a number of diverse political interest groups are delineated to explain why benefits vary so widely from state to state, and why a small number of states require participation in a state operated insurance fund.

In chapter four, four different regressions, using four different scheduled benefits as dependent variables will be employed. The dependent variables are loss of an arm at the shoulder, loss of a leg at the hip, loss of sight in one eye, and loss of hearing in one ear. These values are obtained from a National Chamber of Commerce publication over two-year intervals from 1960 through 1988. The value as the dependent variable is the real benefit allowed by a state for the particular injury in question. Thus, the dependent variable is the scheduled benefit divided by the Consumer Price Index for the year in question.

In chapter five the dependent variable is PRIVATE. PRIVATE represents those six states, Nevada, North Dakota, Ohio, Washington, West Virginia, and Wyoming that require firms within the state to participate in a state-funded WC insurance program. PRIVATE is a dummy variable, taking on the value of one if the state requires participation in the state fund, and zero otherwise. This variable will be regressed against the independent variables to determine the effect political interest groups have on this legislative scheme. Data have been obtained from various issues of the National Chamber of Commerce Publication.

The independent variables are designed to capture various lobbying efforts of political interest groups. Becker (1983) suggests that interest groups within the economic theory of regulation can be diverse groups based on such characteristics

as income, occupation, race, sex, etc. Therefore, a diverse set of labor market characteristics will be employed as political interest groups to determine which groups will be taxed and which groups will be subsidized in the WC system.

INCOME is the per capita money income for residents of each of the 50 states. The nominal values obtained for income are converted to real values by dividing by the consumer price index. This variable is designed to approximate the real disposable income of a state's residents. The values for this variable were obtained from various issues of the Statistical Abstract of the United States.

The following four variables were all obtained from various volumes of the United States Bureau of Census, Census of the Population. ED is the median level of educational attainment for persons twenty-five years of age or older within a given state. BLACK is the percentage of black workers in a state's labor force. YOUNG is the percentage of workers aged 19-22 in a state's labor force. FEM is the percentage of women in a given state's labor force. The number of blacks, women, and young workers were obtained for a given state and divided by that state's total labor force. Since these data were available only in the census years, these data were linearly interpolated in the intervening years.

SMALL is the percentage of firms within a state with 20 or fewer employees. The number of firms employing 20 or fewer

workers were obtained and divided by the total number of firms within a state. These data come from various issues of the United States Bureau of Census, County Business Patterns.

The percentage of the non-agricultural labor force that is unionized is denominated as UNION. This measure did not exist, at least in the Statistical Abstract, prior to 1962. Furthermore, this measure changed from the non-agricultural labor force to the percentage of unionized workers in manufacturing in 1984. As a consequence some modifications were required to construct a complete set of data for this variable. A value for the percentage of the non-agricultural labor force that was unionized was obtained for all states for 1954. As a result, the data for 1960 and 1962 are approximated by a linear interpolation. The percentage change between the years 1954 and 1964 was determined for each state and multiplied by three-fifths for the 1960 entries and four-fifths for the 1962 entries. These values were then added to their corresponding 1954 values to approximate the percentage of the labor force that was unionized in 1960 and 1962.

For the years 1984 through 1988, the percentage of the non-agricultural labor force that was unionized was not available in the Statistical Abstract. The newer measure relating to unionization among manufacturing workers evidently replaced the older measure. The percentage change in the manufacturing series between the years 1984 and 1988 was determined for each state and added to the corresponding state

values for the non-agricultural series last obtained in 1982 for each of the three missing cross-sectional units. These values were obtained from various issues of the United States Bureau of the Census, Statistical Abstract of the United States.

INS is the number of insurance agencies in a state divided by that state's population, thus yielding insurance agencies per capita. Values for these data were located in various issues of the United States Bureau of Census, County Business Patterns.

ADA represents the liberalness (as defined by a group known as Americans for Democratic Action) of a state's United States senators. Each year this group rates politicians by recording their votes on legislation favored by liberals. A rating of one hundred percent signifies full adherence to the position taken by Americans for Democratic Action, while a rating of zero percent indicates a complete rejection of their agenda. Each state has two United States senators. Thus, the value ascribed to ADA is the mean of the two senators' rating for a given year. The data for these data were taken from various issues of Americans for Democratic Action.

TREND represents a threat by the Federal government to invade state government sovereignty with respect to WC. In 1973, a national commission was formed to study the WC system. TREND is captured as a dummy variable with values of zero prior to 1974, one for 1974, two for 1976, etc.

CONTIG is a value representing the mean of contiguous states benefit schedule for the loss of an arm at the shoulder, loss of a leg at the hip, loss of sight in one eye, and loss of hearing in one ear. Values for each of these four scheduled benefits were collected for the states bordering the state in question and divided by the total number of bordering states. This value is deflated by the Consumer Price Index. The data necessary to construct this variable come from the National Chamber of Commerce Publication.

The Consumer Price Index, the population of a given state, and the number of workers in a state's labor force were collected for the relevant years. The Consumer Price Index was used to convert nominal values for the monetary variables to real values. The population of a state and the number of participants in the labor force were used to convert some of the other variables to percentages or shares. Each of these values were obtained from various issues of the Statistical Abstract of the United States.

CHAPTER FOUR

DIFFERENCES ACROSS STATES IN WC SCHEDULED BENEFITS

Introduction

Political interest groups exert political influence to affect the issues described in Chapter 2. Political action taken by these interest groups can help explain the amount of scheduled benefits available in a particular state. To test this hypothesis, four different dependent variables, taken from the schedule of benefits, will be employed.

In this chapter the dependent variables will be measured as the actual levels for the loss of an arm at the shoulder, loss of a leg at the hip, loss of sight in one eye, and loss of hearing in one ear. Actual levels of the independent variables described in Chapter 3 will be regressed against the dependent variable using the regression technique of ordinary least squares.

Two different, although related, data sets will be employed to test the four models. The first data set consists of data points for the dependent and independent variables for each of the 50 states, collected biennially for the period of time between 1960 and 1988. The second data set consists of the 35 states that report insurance information to the

National Council on Compensation Insurance for the period of time between 1960 and 1988.

In the unrestricted data set, the sample size is 727 for the arm, leg, and eye regressions and 642 for the ear regression. In the restricted data set, the sample size for the arm, leg and ear regressions is 526 and 459 for the ear regression. Several states have adopted a wage loss approach to WC benefits and, consequently, no longer utilize a schedule of benefits. Additionally, over time, several other states have declined to include the loss of hearing in their schedule of benefits.

OLS Results

The following tables report ordinary least square estimates for the scheduled benefits for the loss of an arm at the shoulder, loss of leg at the hip, loss of sight in one eye, and loss of hearing in one ear. Each of these dependent variables reflect the actual real benefit allowed by a state for the particular type of injury for a given year.

Benefits should be higher in states where workers receive relatively higher per capita incomes. Assuming the work force is generally risk averse, workers can be expected to select insurance which provides them with their expected income. As shown in the insurance model, increases in wages increase expected income, which leads to higher benefits. This relationship is observed empirically in all of the models. Furthermore, income is highly significant in each of the

TABLE 1

Regression Results for All Fifty States
(t-statistics in parentheses)

	ARM	LEG	EYE	EAR
CONSTANT	7.667372	6.231567	6.519787	14.32364
	(4.197)	(3.352)	(3.653)	(6.826)
SMALL	-.0178956	-.0132488	-.0372144	-.0760818
	(-1.383)	(-1.009)	(-2.918)	(-5.112)
INCOME	.4583433	.454599	.7736144	.3241312
	(2.990)	(2.917)	(5.061)	(1.091)
TREND	.0524633	.042913	.0458686	.0294868
	(4.744)	(3.837)	(4.227)	(2.317)
ED	.0223398	-.000253	.0209971	-.0422599
	(0.650)	(-0.007)	(0.617)	(-1.031)
UNION	.0128904	.0133263	.0084537	-.0019516
	(4.762)	(4.857)	(3.181)	(-0.610)
ADA	-.0007267	-.0005096	.0002117	-.001312
	(-0.999)	(-0.691)	(0.293)	(-1.551)
INS	-695.4722	-442.466	-59.54354	-1096.487
	(-1.473)	(-0.923)	(-0.129)	(-1.992)
FEM	-1.604511	-1.046428	-3.364374	-1.081618
	(-1.690)	(-1.085)	(-3.595)	(-0.956)
BLACK	-.4011346	-.2889719	-.3016857	-.6455168
	(-1.407)	(-1.001)	(-1.071)	(-1.941)
YOUNG	-8.37e-08	-2.98e-08	-3.78e-07	-4.24e-07
	(-0.911)	(-0.320)	(-4.176)	(-3.978)
CONTIG	-.0205503	.0814117	.0326891	-.1266969
	(-0.311)	(1.233)	(0.558)	(-1.883)
PRIVATE	-.3502708	-.330638	-.3850962	-.3185976
	(-6.427)	(-5.975)	(-7.162)	(-5.013)
Adj. R-Sq.	.2445	.2402	.2840	.1562
n	727	727	727	642

TABLE 2
Regression Results for Thirty Six States
(t-statistics in parentheses)

	ARM	LEG	EYE	EAR
CONSTANT	6.224323	4.693525	2.751022	12.50658
	(2.965)	(2.268)	(1.340)	(4.674)
SMALL	-.0168273	-.0135525	-.0086123	-.0611244
	(-3.358)	(-0.975)	(-0.607)	(-3.358)
INCOME	.6886866	.6784169	1.106804	.4118287
	(4.204)	(4.193)	(6.604)	(2.017)
TREND	.0367321	.022551	.0326941	.0116889
	(3.236)	(2.033)	(2.917)	(0.820)
ED	-.0092378	-.0245148	.0007465	-.0955789
	(-0.278)	(-0.749)	(0.022)	(-2.234)
UNION	.0085103	.0082402	.0075581	-.0077951
	(2.965)	(2.925)	(2.625)	(-2.041)
ADA	.0013708	.0019334	.0020273	.0009731
	(1.827)	(2.618)	(2.684)	(0.996)
INS	-1313.163	-667.4043	-1076.818	-1126.413
	(-1.689)	(-1.297)	(-2.067)	(-1.689)
FEM	-.5128406	.1570291	-1.619385	1.178568
	(-0.561)	(0.174)	(-1.765)	(0.968)
BLACK	-.7044045	-.5097914	-.6515268	-.7785976
	(-2.476)	(-1.831)	(-2.285)	(-2.166)
YOUNG	-1.39e-07	-2.63e-07	-1.23e-07	7.66e-08
	(-1.147)	(-1.034)	(-2.161)	(0.462)
CONTIG	-.0603184	.0503777	-.1638089	-.1925704
	(-0.879)	(0.735)	(-2.627)	(-2.407)
PRIVATE	dropped	dropped	dropped	dropped
Adj. R-Sq.	.3849	.3904	.4411	.1663
n	526	526	526	459

regressions except the unrestricted EAR model. This lack of significance may be explained by the fact that income is not significantly impaired by hearing loss.

In states where the workforce is relatively more educated, incomes of that workforce should be higher, resulting in higher benefits. Additionally, more educated workers place a greater value on life and are more reluctant to toil in hazardous occupations. Thus, more educated workers should enjoy a lower probability of injury which should increase benefits. However, the anticipated direct relationship between ED and benefits is found only in the EYE models but, even here, is insignificant. While no correlation between ED and the other independent variables was detected, this unexpected result may be explained by the fact that ED is picking up income. Specification of this variable as the mean educational attainment, rather than as the median educational attainment, might yield a better measure of education in this context. Furthermore, this result might be occurring due to the fact that more educated workers are more likely to correctly perceive safety or overvalue safety than less educated workers. To the extent this occurs, benefits should be lower in states with a relatively educated workforce. On the other hand, the insignificance of ED suggests that misperception of risk is not the only force driving WC benefits.

Unionized workers typically enjoy higher wages than their nonunionized counterparts and have lobbied hard for safer working conditions. As a consequence, one would expect benefits to be higher in those states where a relatively large share of the labor force is unionized. However, unions are also found more often in riskier industries. As shown by the simplified insurance model, expected wages decrease as the probability of injury increases, and benefits will fall. As seen from both Table 1 and Table 2, the first effect appears to dominate. UNION is positive and significant in all but the EAR models. UNION is inversely related to the benefit for loss of hearing in one ear but is significant in only the restricted data set.

Women are injured in workplace accidents less frequently than men. As the probability of injury decreases, expected income increases, and benefits should increase. However, women are less attached to the labor market than men and select themselves into areas of the labor market where the required skills remain fairly constant, and a ready supply of labor exists. As a result of this effect, in states where women comprise a relatively large share of the labor force, wages will be lower, and WC benefits will be lower. FEM is negative in six of the eight regressions and is significant at the five percent level, using a two-tailed test in the unrestricted EYE model. The lack of significance in the majority of the models, as well as the positive signs in two

of the models, is consistent with the theory. Two competing effects exist in this political interest group. On net the wage effect appears to weakly dominate the accident rate effect, since the majority of the signs is negative.

As the percentage of black workers in a state's labor force increases, benefits should fall. This is observed in each of the models. This variable is significant in each regression employing the restricted data set and the EAR regression in the unrestricted data set. Traditionally, blacks have attained lower educational levels than whites, and, consequently, blacks receive lower compensation for their workplace efforts. Additionally, blacks more frequently end up in lower echelon jobs, where the work is more mundane and physically taxing, resulting in higher accident rates. As a final consideration, blacks are less active politically than whites. Lack of political involvement precludes the possibility of subsidies, which, in the context of WC, means that benefits will be lower in states where blacks make up a relatively large percentage of the labor force.

In general, young workers do not appreciate or give full credence to the risks they face at the work site. Consequently, an increase in the frequency of accidents is expected for the young. Furthermore, young workers are typically less experienced than older workers and are generally at the lower end of the wage spectrum. Increased frequencies of accidents and lower wage rates lead to lower

expected income and, as a consequence, lower benefits. This prediction is observed in each of the models, although YOUNG is significant in only the EYE and EAR models in the unrestricted data set and the EYE model in the restricted data set.

Small firms are, in general, manually rated. A firm's own experience is not considered in the establishment of insurance premiums until it has a sufficiently large payroll, and/or the firm operates in a hazardous industry. Therefore, small firms have less incentive to promote work place safety. Russell makes a related argument in stating that large firms more likely receive cost benefits from accident prevention than small firms, due to economies of scale. The evidence suggests that accident rates are lower in large firms.

As the probability of injury increases, expected income declines, and benefits decrease. This inverse relationship is observed empirically in each of the regressions but is significant in only the unrestricted EAR and EYE models and the restricted ARM and EAR models.

Benevolent legislators can increase the amount of the scheduled benefit. States with a liberal orientation are more likely to favor legislation which increases benefits and improves the well-being of those injured, who tend to be poor. This result is observed in each of the models for the restricted data set and is significant in all but the EAR model. However, ADA has a negative sign in three of the four

models in the unrestricted data set but is insignificant in each of these models.

Some states require participation in a state funded WC insurance fund. This gives rise to the possibility that some redistribution across firms and industries occurs in the WC program in those states that require participation. Furthermore, the insurance market in those states does not operate efficiently, since government intervention creates deadweight losses. In these states, low accident firms subsidize high accident firms. Members of political interest groups in low accident industries expend some of their resources to diminish the impact of the unfavorable legislation. This hampers their efforts to effectively lobby for higher WC benefits. Consequently, the required participation in the state insurance fund will be inversely related to benefits. This is observed empirically in each of the regressions for the unrestricted data set and is highly significant. Since none of the six states which require participation in the state fund report to the National Commission on Compensation Insurance, PRIVATE was dropped from the restricted data set.

Fewer insurance companies will operate in states that are highly regulated. Regulation tends to be accompanied by mandated high benefits. As the number of insurance agencies per capita increases, this indicates that a state is relatively unregulated, with low benefits. This prediction is

borne out in the regression results, as INS is inversely related to benefits in each equation. Furthermore, INS is significant in three of the four restricted models and in the unrestricted EAR model as well.

WC is an insurance system under the exclusive jurisdiction of each of the states' legislatures. Over time, states have jealously guarded those areas left to them by the federal government to regulate. In 1973, a National Commission was formed to study the WC system. The report which followed was highly critical of the WC system and recommended that WC become federalized. In the alternative, the National Commission suggested 19 areas of the WC program, including benefits, that needed improvement. Evidently, this threat to the states' sovereignty has spurred the states to action, at least with respect to benefits. TREND has the expected sign and is highly significant in each of the regressions.

As benefits in surrounding states increase, a state is expected to increase its own benefits. As costs increase, firms may be tempted to relocate to lower cost states. Additionally, it is well known that the labor force is mobile. Other things equal, a state offering relatively low benefits can expect to lose a portion of its labor force to higher benefit states. For both these reasons, increases in benefits in contiguous states should lead to increases in benefits in a particular state. Nevertheless, an inverse relationship is

found in five of the eight models, and CONTIG is significantly negative in the restricted EYE and EAR models.

Error-Components Results

Both the restricted and unrestricted data sets employed in the previous section, and to be employed in this section, have both time-series and cross-section dimensions. Ordinary least squares treats each observation as a unique member of the data set and accords each observation equal weight. Additionally, the ordinary least squares model contains one error term. As long as the time and cross-sectional errors are independent and identically distributed, an assumption difficult to verify a priori, the technique of ordinary least squares will provide consistent and efficient estimates of the parameters (Davidson and MacBinion, 1993).

Davidson and MacBinion state that if the assumption that the errors are independent and identically distributed is not met, it may become necessary to employ a different regression technique. One such technique is the error-components model. The error-components model focuses on the error term. To see this, a univariate nonlinear regression model can be formulated as:

$$y_{ti}=x_{ti}(\beta)+u_{ti},\ t=1,\ldots,T,\ i=1,\ldots,n$$

where t is an index of time and i is a cross-section index. The error term can be viewed as representing three different independent shocks. Thus,

$$u_{ti}=e_t+v_i+\varepsilon_{ti}$$

where e_t affects all observations for time period t, v_i affects all observations for cross-section units i, and ε_{ti} is an error unrelated to time or the cross section observation.

Two ways exist to estimate a regression model that has several error components. These two approaches are known as the fixed-effects model and the random-effects model. In the fixed-effects model, the model is estimated conditionally on the e_t and v_i errors. Since the model is conditioned on these error terms, it is not assumed that the errors are independent of the regressors. Thus, the fixed-effects estimator depends only on the deviations of the regressand and regressors from their respective group means.

The random-effects model is estimated unconditionally. That is, the regressors are assumed to be independent of e_t and v_i. With time series cross-sectional data, n frequently is large, and T often is small. Where the variation is predominantly across cross-sectional units, the parameters are usually estimated quite well by the random-effects model. However, where the variation occurs over time, the random-effects model will not estimate the parameters very well. Thus, where n is small, parameters estimated by the random-effects model will not be as efficient as those estimated by the fixed-effects model.

A third method within the error-components model is known as the between-groups estimator. Since this technique involves only T observations, this method will normally be

inefficient. Furthermore, this technique will clearly be inconsistent if the v_i's are correlated with the group means of the regressors.

Maddala (1977) states that the generalized least squares estimator for ß can be written as

$$\hat{\beta}_{GLS} = \frac{W_{xy} + \Theta B_{xy}}{W_{xx} + \Theta B_{xx}} \text{ where } \Theta = \frac{\sigma_u^2}{\sigma_u^2 + T\sigma_u^2},$$

where W refers to within groups and B refers to between groups, and

$$B_{xx} = T_{xx} - W_{xx}$$

$$B_{xy} = T_{xy} - W_{xy}$$

$$B_{yy} = T_{yy} - W_{yy}.$$

T_{xx}, T_{xy}, and T_{yy} are the total sums of squares and sums of products, and W_{xx}, W_{xy}, and W_{yy} are the within-group sums of squares and sums of products. Furthermore,

$$\hat{\beta}_{OLS} = \frac{T_{xy}}{T_{xx}} = \frac{W_{xy} + B_{xy}}{W_{xx} + B_{xx}}.$$

Thus, ordinary least squares is a special case of generalized least squares since the two models produce the same results when Θ is 1.

Davidson and MacBinion state that when one or more of the regressors do not vary within groups, but do vary between groups, the coefficient of that variable cannot be identified by the fixed-effects model. Because this is the case with the TREND variable, this section will be analyzed using the random-effects model.

TABLE 3
Regression Results for all Fifty States
(t-statistics in parentheses)

	ARM	LEG	EYE	EAR
CONSTANT	3.494939	3.584571	3.978705	4.75417
	(1.641)	(1.652)	(1869)	(2.119)
SMALL	.0085246	.0060594	.0024959	-.008592
	(0.598)	(0.419)	(0.176)	(-0.569)
INCOME	.5871653	.596038	.5522844	.3310928
	(3.582)	(3.582)	(3.382)	(1.935)
TREND	.0318622	.0307433	.0345517	.0067363
	(3.540)	(3.379)	(3.849)	(0.716)
ED	.0282381	.0264084	.0424487	.0485098
	(0.868)	(0.796)	(1.311)	(1.314)
UNION	.0007297	.0010512	.0030598	-.0029591
	(0.208)	(0.294)	(0.878)	(-0.780)
ADA	.0007971	.0008469	.0008615	.0014855
	(1.304)	(1.364)	(1.412)	(2.214)
INS	-268.4862	-252.1015	-65.67794	-324.3329
	(-0.665)	(-0.617)	(-0.163)	(-0.713)
FEM	-1.485007	-1.580426	-1.527074	-1.124853
	(-1.846)	(-1.935)	(-1.901)	(-1.313)
BLACK	-.2046838	-.0569163	-.2376053	.1252852
	(-0.333)	(-0.090)	(-0.393)	(0.176)
YOUNG	-4.94e-08	-4.60e-08	-1.32e-07	-3.15e-07
	(-0.548)	(-0.503)	(-1.474)	(-3.121)
CONTIG	.065891	.0669616	.0209723	.1495812
	(1.083)	(1.084)	(0.354)	(2.398)
PRIVATE	-.324749	-.3137213	-.3360236	-.2916247
	(-2.021)	(-1.898)	(-2.140)	(-1.583)
R-Sq.				
within	.2580	.2424	.2451	.1635
between	.2018	.2086	.2819	.0413
overall	.2172	.2141	.2649	.0854
n	727	727	727	642

TABLE 4
Regression Results for Thirty Six States
(t-statistics in parentheses)

	ARM	LEG	EYE	EAR
CONSTANT	5.705862	5.973382	6.85741	7.185621
	(2.417)	(2.516)	(2.957)	(2.702)
SMALL	-.0100801	-.0128352	-.0182607	-.0302349
	(-0.634)	(-0.806)	(-1.169)	(-1.666)
INCOME	.5697532	.5562895	.5769113	.2779454
	(2.972)	(2.902)	(3.056)	(1.283)
TREND	.0392251	.0363145	.0482193	.0121165
	(3.938)	(3.645)	(4.905)	(1.116)
ED	-.011021	-.008894	-.0129509	.0223857
	(-0.308)	(-0.248)	(-0.369)	(0.529)
UNION	.0047313	.0053655	.0076638	.0031929
	(1.191)	(1.358)	(1.966)	(0.686)
ADA	.0020124	.0023107	.0021442	.0020342
	(3.002)	(3.431)	(3.251)	(2.575)
INS	-337.3191	-169.3993	-336.483	-889.5223
	(-0.646)	(-0.324)	(-0.658)	(-1.497)
FEM	-.7088321	-.6246022	-.740833	-.3745454
	(-0.811)	(-0.712)	(-0.862)	(-0.374)
BLACK	-.4678278	-.3297276	-.7538898	.2301193
	(-0.843)	(-0.609)	(-1.388)	(0.313)
YOUNG	-6.05e-08	-2.82e-08	-4.70e-08	-2.16e-07
	(-0.484)	(-0.223)	(-0.379)	(-1.340)
CONTIG	.0283682	.014738	-.0892529	.1229432
	(0.383)	(0.194)	(-1.229)	(1.550)
PRIVATE	dropped	dropped	dropped	dropped
R-Sq.				
within	.3413	.3282	.3568	.2318
between	.4359	.4603	.4840	.0202
overall	.3849	.3931	.4306	.1096
n	526	526	526	459

INCOME is positive and significant in each of the models with the exception of the restricted EAR model. The INCOME coefficient is larger in the unrestricted random-effects models than in the OLS models with the exception of the EYE model and smaller in each of the restricted models. The level of significance for INCOME is higher in the unrestricted random-effects model except the EYE regression, while the restricted OLS models are more significant than the restricted random-effects models for INCOME. The random-effects models verify the prediction that increases in income lead to higher benefits.

ED is positive in each of the unrestricted random-effects models as predicted, but positive in only the EAR model of the restricted data set. ED is not significant in any of the random-effects models. In six of the eight random-effects models, ED has a larger coefficient than in the OLS models.

UNION is directly related to benefits in all but the unrestricted EAR model. The UNION coefficient is smaller in the random-effects models than in the OLS models in all except the restricted and unrestricted EYE models. UNION was mostly significant and positive in the OLS models but is mostly insignificant in the random effects models.

While insignificant in the restricted models and the unrestricted EAR model, FEM appears to be inversely related to benefits. In four of the eight random-effects models, FEM

coefficients are larger than their OLS counterparts. The random-effects models indicate that the wage and labor market attachment effects dominate the safety effect.

BLACK is negative, as predicted, except in the restricted and unrestricted EAR models, but insignificant in each of the random-effects models. The coefficients generated by the random-effects models for BLACK are smaller than those generated by OLS. BLACK was much more significant in the OLS specification. Perhaps its weaker performance in the random-effects specification is due to the fact that the data are interpolated from the census data.

In the random-effects models, YOUNG is inversely related to benefits in all regressions but significant in only the unrestricted EAR model. Again, the reduced significance may be attributable to the interpolation of the data. The regression coefficients are larger in the OLS regressions for five of the eight models than in the random-effects models. Although YOUNG is not significant, lower wages, risk-taking, and lower levels of human capital would suggest that benefits will be lower in states with a relatively high percentage of young workers.

Surprisingly, SMALL is directly related to benefits in three of the four unrestricted random-effects models and is less significant than in the OLS regressions. SMALL is negative and significant in the restricted EAR model. The coefficient for SMALL is smaller in six of the eight random-

effects models than in the OLS models. While SMALL is largely insignificant, the inverse relationship predicted, due to the relatively higher accident rate in small firms, is observed in more of the random-effects models.

As anticipated, ADA is positive and significant in the restricted random-effects models, positive in the unrestricted models, but significant in only the EAR model. Furthermore, ADA has a higher coefficient in each regression in the random-effects model and tends to be more significant than for OLS. The random-effects model provides verification for the prediction that the presence of a philanthropic legislative body can result in higher benefits.

INS is negatively related to benefits, as predicted, in each random-effects model, but it is not significant in any of them. The regression coefficient for INS in the random-effects model is smaller in seven of the eight regressions than in the OLS models and is less significant than in the OLS models.

Since none of the six states which require participation in the state insurance fund reports to the National Commission on Compensation Insurance, PRIVATE was dropped from the restricted data set. PRIVATE is inversely related to benefits in each of the unrestricted random-effects models and is significant except in the EAR model. PRIVATE provides strong support for the idea that the deadweight costs associated with redistribution decrease benefits.

Although insignificant, CONTIG is positive in three of the four restricted models and one of the four unrestricted models. The CONTIG coefficient is smaller than its OLS companion in five of the eight random-effects models. CONTIG provides only weak support for the prediction that benefits in a state will increase when benefits in surrounding states increase.

TREND is positive and significant in seven of the eight random-effects models. The coefficients for TREND in the restricted random-effects model are larger than for the OLS models; however, the coefficients for TREND are larger in the unrestricted OLS model than for the random-effects model. TREND provides strong evidence for the prediction that a threat to state sovereignty will compel compliance with a federal position.

Summary

Taking the OLS and random effects models as a whole, it appears that three different interest groups have a significant impact on WC benefits. Interest groups with relatively high incomes are able to muster the financial resources necessary to form effective political lobbies. To the extent that the higher income groups are relatively more educated, these groups can more easily assimilate and digest the complex issues that are associated with the attempt to gain subsidies.

The National Commission on Workmen's Compensation formed an effective lobby in 1973 which persists today. The National Commission was a small group of relatively educated people who had a direct link to Congress. This group was provided with funding to study problems in the WC system and a platform to voice their findings. As a result, this group has been able to gain subsidies through coercion, or threats of federalizing the WC system, which has led to higher benefits.

High risk industries generally provide a very small share of the job opportunities within a given state. The small size of these industries give them an advantage in the competition for favorable legislation. Legislation promoting redistribution comes at a small cost to the much larger, less risky labor market. The small size of the high risk industries aids them in organizing. Furthermore, the promise of subsidies should reduce the problem of free-riding. Consequently, subsidies in the form of regulation, or more particularly, required participation in a state-run insurance program has accrued to high risk industries. This subsidy has redistributive effects that have caused lower benefits in those states mandating participation in the state insurance program.

CHAPTER 5

MANDATED PARTICIPATION IN STATE INSURANCE PROGRAM

Introduction

Governmental regulation is a fact of modern life. Government regulation is particularly prevalent in the area of occupational health and safety. Since WC legislation addresses an occupational health and safety concern, it is part of the regulatory environment.

Many economists object to governmental intrusion into the labor market. Intrusion by governmental agencies implies that the markets suffer from imperfections. However, many economists believe that competitive labor markets will provide fully informed workers with optimal safety.

Other economists believe that workers systematically underestimate the risk associated with their employment. If this is true, regulation can be useful in correcting market inefficiencies leading to market improvements.

WC has, up until the present, been left to each of the 50 states to legislate in a way of their own choosing. One of the benefits of allowing each individual state to create its own WC legislation is that this system affords 50 simultaneous experiments to assess the performance of the WC system. Certain aspects of WC are more or less common in all of the

states. However, notable differences do arise in WC legislation from state to state. One of the more curious differences is the law in six states that requires firms to participate in a state funded insurance plan.

The six states that require participation in a state fund are: Nevada, North Dakota, Ohio, Washington, West Virginia, and Wyoming. Required participation leads to the possibility that redistribution occurs in these states. In these states, it is hypothesized that low accident firms may be forced to subsidize high-accident firms through state-sanctioned redistribution. In this chapter, the political model will be employed in an attempt to discern the labor market characteristics that exist in those states that require participation in the state fund.

In states requiring participation in a state fund, high accident firms seek reduced WC insurance premiums at the expense of low-accident firms. In the aggregate, reductions in the insurance premiums of high-accident firms must be offset by increases in the insurance premiums of low-accident firms, if a balanced budget is to be attained. Limits to redistribution do occur as the deadweight costs to redistribution rise (Adams, 1986).

Adams states that redistribution in the context of unemployment insurance is asymmetric. This would appear to be true within the WC system as well. High-accident firms seek the subsidies. However, most workers are risk-averse and

eschew employment opportunities in these industries. This indicates that high-accident firms are concentrated in industries that comprise a small share of the labor force. The asymmetry results from the small size of the sectors in which high-accident firms are located. In accordance with the theory of the political model, subsidies are obtained, up to the point deadweight costs become oppressive, at very little cost to the much larger low-accident segments.

Gains from increased taxation diminish as deadweight costs increase. This results in decreased political activity among subsidized groups. On the other hand, increases in the deadweight costs increase political pressure of taxed groups. This is due to the fact that tax reductions have a smaller effect on the amount of the available subsidy. Thus, given the existence of deadweight costs, taxed groups have an inherent advantage in the competition for political influence.

Predictions

Workers expect benefits to be on par with their expected income in the event of an occupational injury. Government intervention in the labor market creates distortions in the form of deadweight losses. The presence of deadweight losses means that the benefits a worker receives, in the event of injury, will be less than expected income for the taxed workers. Thus, in general, workers in the political interest groups that are taxed should be opposed to regulation.

However, workers in interest groups that seek subsidies should receive benefits that are higher than expected income. Workers in riskier industries seek subsidies to offset the higher probability of injury, which would lead to benefits in excess of their expected income. Thus, workers in risky industries can be expected to seek subsidies in the form of regulation, since regulation makes them more than whole.

Risky industries comprise a small share of the total labor force within a given state. These industries are usually concentrated and can, therefore, be organized more easily as a political lobby. As long as the subsidies requested are not oppressive, groups seeking subsidies have the advantage in obtaining the desired legislation. The much larger share of less risky enterprises will not oppose the regulation if the cost of opposing the regulation is greater than the tax imposed. Thus, the relatively high income states may acquiesce to regulation proposed by small interest groups.

Unions have been an effective political lobbying group for a long time. In an attempt to maximize their members' incomes, unions may attempt to influence legislation which promotes this goal. Since unions are most often located in industries with high accident frequencies, unions may seek subsidies in the form of WC regulation. While union members generally enjoy higher wages than nonunionized workers, they face greater job risks. Higher income normally means higher expected income in the event of an injury. However, the

presence of higher accident rates devalues the unionized worker's expected income. By seeking regulation, such as required participation in a state fund, unions can benefit from redistribution within the WC system. This should increase the union worker's expected income.

States with a liberal sentiment can be expected to help the downtrodden. This has been seen many times in the past with the plethora of social programs in existence. As the percentage of liberals within a state increases, this group can be expected to call on government to ameliorate a perceived evil, such as high accident rates in risky industries. One way this can be accomplished is to ask government to subsidize risky industries. Liberals want to redistribute toward the poor. Support for mandatory participation in state funded insurance programs furthers this goal.

Insurance agencies per capita should be inversely related to mandatory participation in a state insurance fund. Required participation is a governmental intrusion into the labor market in the way of a regulation. The more regulated a state is, the less likely that insurance companies will endure the regulatory environment.

Women traditionally have assumed employment roles in less risky occupations. An indication that the percentage of risky jobs within a state is relatively small is a relatively large percentage of women in the labor force. If the

percentage of risky jobs decreases, benefits should increase, which should obviate the need for special legislation. Thus, as the percentage of women in the labor market increases, redistribution is less likely.

As the percentage of blacks in a state's work force increases, regulation should decrease. Historically, blacks have been less politically motivated than whites. Blacks are a small segment of society and have difficulty promoting their agenda in a majority rule system. Because of this political apathy, risky firms which hire a relatively large share of blacks may have to battle the problem of free-riding in order to acquire subsidies through regulation. Thus, it is expected that redistribution will not be as likely in states where a relatively large share of the labor force is black.

A political interest group called MINING, representing hazardous industries, is introduced in this chapter. MINING is the percentage of the labor force that engages in mining operations of one form or another. The presence of ultrahazardous industries within a state should lead to higher accident rates. Workers in high accident industries can be expected to lobby for redistribution in order to increase their welfare in the event of an injury. Particularly, where the ultrahazardous industry is relatively small, the problem of free-riding is reduced, and a more effective lobby can result. Thus, it is expected that states that provide employment opportunities in ultrahazardous industries will be

more likely to have redistribution through required participation in the state insurance program. This variable was obtained from Supplement to Employment, Hours and Earnings, States and Areas, Data for 1980-1984, United States Department of Labor, Bureau of Labor Statistics.

A small, powerful risky-industry lobby may be able to prey on the much larger safe industry segment and acquire subsidies at their expense. It is expected that a small powerful lobby can muster the political clout needed to compel a state to grant subsidies within the WC system.

Results

Since the dependent variable assumes a value of only 0 or 1, the limited dependent variable regression technique known as the logit estimate was employed. The pooled cross-sectional time series data were employed for the years 1960 through 1988. As such, 750 observations are used to perform this regression technique.

Each of the variables are highly significant. INCOME is positive as predicted. Workers earning relatively higher incomes would normally be opposed to legislation that would serve as a tax on their incomes. However, since the subsidized group is extremely small when compared to the much larger taxed group, the tax imposed per worker is relatively small. The cost of fighting against the taxation regulation appears to be higher than the cost of acquiesence.

The results suggest that unions are an important influence in bringing about legislation which increases the incomes of their members. Since unions are often located in risky industries, unions attempt to seek legislation that

TABLE 5
Cross-sectional Results for Mandate

	Coefficient	t-Statistic
CONSTANT	-27.68392	-3.817
INCOME	3.556389	3.199
UNION	.1111134	5.277
ADA	-.0150302	-2.558
INS	5827.328	1.773
FEM	-14.57727	-2.386
BLACK	-16.77181	-4.113
MINING	16.55335	3.442
Pseudo R^2	.2354	
n	750	

either reduces accident rates or that subsidizes the injured worker. By seeking required participation in a state fund, unions can benefit from the resulting redistribution.

The presence of strong liberal sentiment within a state normally is associated with a high degree of regulation in the form of governmental involvement. As a consequence, one would expect a positive relationship between regulation and a relatively high degree of liberal sentiment within a state.

However, this relationship is not found within the WC model employed in this section.

As a general rule, one would expect that increased regulation would result in fewer insurance agencies per capita. Governmental regulation, such as required participation in a state insurance fund, should result in fewer insurance companies that are willing to endure the regulatory environment. However, this result is not observed empirically.

As the percentage of women in the labor market increases, redistribution becomes less likely. Women are less attached to the labor market than men. WC benefits only those workers who are injured in the course of their employment. Women that seek employment in high risk industries are not likely to continue that employment for a lengthy period of time. Thus, high accident firms that hire women may find that female employees are apathetic toward a redistributive program that yields comparatively less utility to them. This result, an inverse relationship between the percentage of women in the labor force and required participation in a state operated insurance program, is observed in the model.

In states where blacks are a relatively large share of the labor force, there is less regulation. Historically, blacks have not been as politically motivated as whites. Risky firms that employ blacks may have to deal with the problem of free-riding to a greater extent than firms with

fewer black employees. This result is observed empirically in the model since the percentage of blacks in a state's labor force is inversely related to required participation in a state insurance program.

The presence of an ultrahazardous industry in which a small share of a state's labor force is employed leads to a higher probability of redistribution through WC. A small unified group can more readily organize and police the problem of free-riding. Gains from political activity in the form of regulation are available at the expense of the much larger safe occupation segment as long as the taxes sought are not too oppressive.

CHAPTER 6

SUMMARY

Many economists believe that optimal safety will be provided in competitive labor markets. Nevertheless, the government has decided to intervene in the labor markets and mandate regulation concerning occupational health and safety. WC, as part of the occupational health and safety morass, is subject to regulation. Other economists believe that labor market imperfections do arise because workers' perceptions of safety differ from the actual level of safety that prevails on the job. These economists believe that if workers systematically undervalue safety, WC can help bring about improvements.

The goal of this dissertation has been to ascertain the determinants of two different aspects of the WC system. Chapter 4 attempts to determine the reason for the wide variation in scheduled benefits across states. Chapter 5 is an attempt to discern the reason some states require participation in a state-run insurance program. To effectuate these goals, the political model, along the lines of the Becker approach, was adopted.

The political model postulates that competing interest groups expend time and resources in an effort to curry

political favor. This political activity is an attempt to gain subsidies or to minimize taxation. Political equilibrium depends on the ability of interest groups to mount pressure on relevant issues, the amount of additional pressure a group can muster, group size, and the deadweight costs of redistribution. A number of different political interest groups have been presented in order to test the hypotheses introduced in Chapters 4 and 5.

These political interest groups appear to compete primarily on the issues of income, safety, and regulation. Within the context of WC, interest groups that have the ability to influence legislation which increases their members' income or decreases the risks associated with their jobs can increase the expected income of their members. This will result in higher WC benefits.

The results of chapter 4 validate, to a certain extent, the predictions that arise from the simplified insurance model. In states where workers earn relatively higher wages, or are employed in relatively safe occupations, benefits are higher. The presence of a relatively large black or young labor force depresses the benefit level in a state. Both black workers and young workers earn less income than whites and more experienced workers.

In general, the presence of unions leads to higher benefits. On whole, unionized workers have higher wage rates than nonunionized workers. Also, unions have long advocated

for safe working conditions. These two effects appear to offset the fact that unions are often located in hazardous industries.

There is some support for a negative coefficient on FEM. Women normally find employment in nonhazardous occupations; however, women earn less than men because they are not as attached to the labor market. Thus, the wage effect appears to dominate the risk effect.

This dissertation also demonstrates the impact that government regulation, even the threat of regulation can have on social programs. The threat of federalization that originated in 1973, has had a large and continuing effect on benefits. The results of this dissertation indicate that one of the reasons benefits have increased is due to the threat of federalization. Also, this paper shows that where a state government intervenes in the labor market, governmental action can have a chilling effect on benefits. This is evidenced by the fact that required participation in a state insurance fund decreases benefits, presumably because of greater deadweight costs. This is consistent with Becker's model of regulation.

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BIOGRAPHICAL SKETCH

Richard Hoffman was born October 31, 1954, in Cape Girardeau, Missouri. Shortly after birth, the author, along with his family, moved to Paducah, Kentucky. He attended schools in the Paducah Public School System and upon graduation from Paducah Tilghman High School, he embarked on a long circuitous journey through academia. The author attended colleges and universities, including, but not limited to, Martin Methodist College and Murray State University prior to matriculating at the University of Florida. A successful defense of this paper will net the author a second terminal degree, to be paired with a Juris Doctor obtained in December, 1990, from the University of Florida.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Larry Kenny, Chairman
Professor of Economics

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

David Denslow
Distinquished Service
Professor of Economics

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Mark Rush
Professor of Economics

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

David T. Brown
Associate Professor of
Finance, Insurance and Real
Estate

This dissertation was submitted to the Graduate Faculty of the Department of Economics in the College of Business Administration and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dean, Graduate School